

## DYNAMIC TRAINING DEVICES IN CRM TRAINING

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CAPT. LAWVER: Sometimes I feel a little insignificant after talking with many of you out there with big airplanes and large pilot groups. But relatively speaking, even though we are small, it appears we have many of the same problems. I know we are all interested in proving our training effectiveness and insuring that flying safety is as successful as humanly possible.

Just to give you an idea of who we are. I heard somebody on the bus say, "My God, who is that guy?" And what's Scenic Airlines? I didn't know until six years ago either, and if you haven't been to Las Vegas and seen these airplanes with the wild colored tails flying around, you probably wouldn't know.

A year ago at Tampa we indicated that we are a Part 135 commuter operator. We schedule tour flights through the Grand Canyon. That is still true, and we operate out of Las Vegas and the Phoenix area. The only thing that's changed is our equipment and we are progressing -- I think it is progression -- from the Cessna 402s and 404s to Twin Otters, so we are getting a little more involved now in the two pilot versus the single pilot concept, although we are still doing the majority of flying in the 402s and 404s.

Just to give you a little background of what we have out there, this summer during the peak of our season we flew five Titans, down from twelve last year, eleven 402s, and we added our first Twin Otter called the Vistaliner, in July. Our second one comes on the line next month, with the third hopefully early next year. We eventually plan to phase out the Cessna 402s and 404s and have a fleet of modified big windowed Twin Otters. And I'll show you a picture of that in just a minute.

Our pilot force consists of 20 full-time pilots plus five part-time pilots this summer. That's a drop from 30 pilots last year and 50 just two years ago. This season for the first time we did not hire any new pilots, because our recall from furlough was 100 percent. It appears we will furlough at least ten of our full-time pilots in the next two months. Out flight instructor and check airmen status is pretty much the same. By the way, if you are looking for any

sharp 402 and 404 pilots, I've got a few who would like to have some jobs this winter.

We are seasonal, and that's what happens to us. We go hot and heavy from May until October. That's the peak of our season, and then we kind of roll over and die during the winter. So, unfortunately, we hire for that peak and then we have to furlough during the winter months.

We did spend considerable time and effort this year on our Otter training as we geared up for our first aircraft. We are now doing the same thing in anticipation of our second and third aircraft.

The times shown here are just for information purposes and are minimum training times including that in the ATC 810 that Dick mentioned. As you can see, we do use it for initial and recurrent training for the Twin Otter. Obviously, it cannot be counted toward any flight training, but we found it helpful in scan development, overall visualization of position and just basic instrument approach procedures and practice.

For those of you who are unfamiliar with this training device -- do we have any ATC people here today? Oh, yes. Good to see you. The ATC 810 is essentially a cabin class cockpit procedures trainer. The flight parameters, appearance and control feel are that of an 8,000 pound twin for our use. We had it modified for a Cessna 404 Titan.

The instructor panel produces 23 individual system failures, allowing almost any conceivable emergency situation to be simulated. The navigation function is achieved on a 150 square mile navigational area, factory programmed into the trainer. Ours is set up for the Los Angeles area. Normal and emergency procedures can be realistically practiced along with emergency situations of course never practiced in the real world of flight.

Engine sound is an additional element which adds to the realism of the environment. The partially enclosed cockpit includes a pilot seat and a set of rudder pedals with a kick that can produce about 150 pounds of pressure to show what is needed to overcome the yaw on engine failure. That generally gets a new pilot's attention rather quickly.

We also have developed a CRM pilot education safety awareness program plus trying to tie in as much CRM knowledge into our ATC 810 training device as possible. We put together a library of CRM materials, much of it from the good NASA folks here at Ames including the ASRS reporting system, information obtained from the RAA CRM committee and other airline information we have been able to obtain and

additionally a self-study course called Aviation Stress Management for the Professional Pilot. This one is developed by Pentastar Aviation, Inc. a subsidiary of Chrysler Corporation. I'm sure some of you have heard about that.

Our pilot group bought this program on their own. They paid for it out of their own pilots group fund, which was encouraging. They too realize the importance of both cockpit resource management and stress management, both in a single pilot atmosphere and a two man crew environment.

To give you an idea of what is included in that particular program, there are six sequential units to the program, each comprised of a manual workbook and audio cassette tape recording. It is designed as a self learning, self paced program which can be completed almost anywhere. The one unit in there I like especially is called Torque, Pressure, Tension and Strain, which pretty well describes the regional airline management job these days. I guess if you get torqued off enough at your pilots then you can go to this and it will tell you how to relieve your pressure, tension, and strain.

Concerning the ATC 810, we have developed three basic profiles in the LA area: Long Beach, Santa Ana, and LA itself. We try to accomplish as much as possible during each session in addition to the various ILS, VOR, NDB approaches. The training instructor acts as tower, departure and approach control and on occasion as company dispatcher.

We found that the pilots get pretty good as far as basic flying skills are concerned once they master the idiosyncrasies of the trainer. And they generally fly a decent approach with practice. But as the difficulty of the situation increases and they must react to other factors such as changes in weather, diversion airports, equipment failure including engine failure, the training session gets a little more interesting. And you do see varying degrees of overreaction, confusion, mismanagement of available resources as the situation gets more complex.

Of course, in our trainer the pilot is on his own, so he must rely on his own judgment and decision making since there is no crew coordination involved. Delegation of tasks and assignment responsibilities are a one-man effort in this case. We do emphasize using the ground controllers as much as possible to insure the pilot clearly communicates with ATC concerning the seriousness of his problems and in turn clearly understands ATC instructions back to him. We also stress using company dispatch if that will help reduce single pilot workload; in other words, have someone else share the responsibility of problem solving if time and conditions permit. Still very appropriate are such factors

as how the pilot establishes priorities in the cockpit, monitors and cross-checks essential instruments and systems, assesses problems encountered and tries to avoid less critical distractions and problems.

Following successful completion of the three basic profiles I've mentioned, we spend a minimum of two hours in the trainer, both initial and recurrent training, on nothing but takeoff emergencies from the Grand Canyon Airport. We set up the trainer for a high density altitude environment with a field elevation of 6,600 feet, max gross weight at takeoff. And we practice engine cuts on the roll and prior to lift off as well as engine failure after lift off and you are committed to fly. This is repeated until the pilot can correctly recover and maintain all established parameters in approximately 12 seconds.

During initial ground training, we set up different situations that could occur on our Grand Canyon tour. For example, what if certain situations develop? What if the runway is closed at the Grand Canyon Airport? What if fuel problems exist enroute? What if engine fails during the tour, other equipment failure, avionics and such? And last but not least, passenger problems.

The important thing we stress here is to have a plan and think about what options are available when suddenly an emergency exists and, again, to use all resources available. Get some help from someone else: tower, dispatch, other tour aircraft in the area.

We give the pilot a hypothetical problem and certain known facts and have him make a decision on what he thinks is his best course of action. We get some pretty interesting reactions to this approach. We find it a good learning situation and a valuable insight to an individual pilot's decision-making process. This also is very appropriate for our Twin Otter crews. We are trying to bring that in now with our new crews.

We have experienced all these "what-if" that you see up there on the screen. I'm not sure if that's good from all standpoints. 1. Fuel starvation Fortunately, we haven't had any more horror stories since Tampa. If you want some more on that, I'll tell you in the next couple of days. 2. Engine failure or power loss especially after takeoff. Dick alluded to that. we did lose a airplane three years ago, and that was before the ATC 810. The engine problems we have had since then, (we have had three engine failures or power loss) resulted in all aircraft returning to the airport after feathering the engine and flying the aircraft back in with a maximum load of nine or ten people. 3. We've run the gamut on gear malfunctions. I won't go into that other than

we had some real problems with the Titans back when we first got them. Some of you have been flying 404s, you remember initially there was a problem with the main gear tires not coming out of the wheel well when we put the gear down. One gear would come all the way out and lock and the other would hang up in the wheel well itself. This happened four different times within about two or three months. Fortunately, I was in a position to hop in an airplane and go up and rendezvous with the aircraft and act as chase pilot and try to calm the pilot down a little bit and go through a g force maneuver. And of course with nine or ten people that's always a lot of fun. Not only were the passengers hysterical, the pilot was getting that way about that time too.

As I mentioned, one main gear was down, with the other tire hanging partially out of the wheel well. What happened, the tire expanded and would not physically come out of the gear well itself. So with some maneuvering and a little praying and a little hoping, finally all those incidents were successful.

The most serious one was about five miles out on final at McCarran Airport in Vegas with the runway foamed, figuring that we were going to have to make a single main gear landing. Of course, going through all the emergency procedures and the emergency gear system obviously wasn't going to really help him at that time. But five miles out, out comes the wheel, and it went down and locked. So fortunately we were successful on those particular incidents.

The point here is to learn from the experience of others in similar situations and try to eliminate the obvious bad decisions and emphasize the basic principles of resource management.

The one I didn't mention was passenger problems. Of course, you get everything from an overly talkative passenger -- I think John Lauber mentioned in his pitch about the person that is over there in the right seat just asking questions: Why do you do this? Why do you do that? What's that down there? Why is that airplane going this way when we are going that way? And the hysterical passenger, of course, can be a real problem. We have had several of those. I personally have had several, and I hope that's no reflection on my flying.

But normally our tour takes about an hour and fifteen minutes, and for some reason they don't get hysterical until about halfway over. So you're really too far to turn around and go back, and the other people, of course, are probably reacting to that individual who is getting hysterical. And

it can be a real problem. Fortunately, we have been able to use the other passengers that are in the airplane to help calm the person down, but the main problem is a small airplane, confined seating, and of course a claustrophobia-type reaction. Fortunately, we haven't lost a passenger yet, so maybe we've done something right. Also reasonable aircraft control, the ability to follow instructions from outside the cockpit, and the use of check list are important factors. We try to stress the point that in different situations there are different approaches to the problem. There may not be a single best solution. This is discussed during the debriefing with an exchange of ideas between both the pilot and the instructor. Probably one of the best measuring devices to evaluate the effectiveness of our total effort is the overall improvement I personally see as check airman, not only on local check flights but on the line checks during regularly scheduled flights.

With the additional information we pick up at such get-togethers as this, we hope to be able to further improve our training effectiveness and overall flying safety.

That's our new Twin Otter. I had to put a plug in for you Otter fans out there. The windows have been expanded at least three times the normal window size of the Twin Otter probably as you know it. A little better view at the top there. The passenger visibility from those large windows and high wing is tremendous. We are getting some real good reactions from our passengers that you can see forever out of either side of the aircraft. Of course it's designed and it has been modified as a tour airplane. The old beast still goes 130 knots, and it's really working out well for us.

I remember in Tampa last year I invited you guys to come by and ride in a Ford Trimotor. We haven't been flying it there too much lately, although we still have the Ford Trimotor. But if you get into Las Vegas and have the time, come out and see us and we'll try to get you a ride on a Twin Otter. If you haven't been over the Grand Canyon looking out one of these huge windows, you really haven't lived. So with that I'll close and entertain any questions.

#### DISCUSSION

MR. COLLIE: What Jim didn't tell you, they've got lambswool seats throughout the airplane including the pilot's seat. What he also didn't tell you is that about 80 percent of their passengers are foreign nationals. When they get hysterical, they get hysterical in their native tongue.

CAPT. LAWVER: It all sounds the same.

MR. COLLIE: Jim, thank you.

Next on the program is Captain Mike Sele, the chief pilot of Air Wisconsin. Air Wisconsin is the only member of the Regional Airline Association that is operating a four-engine turbo jet airplane. They put it in operation the 27th of June, and as a result Mike has not been able to accomplish all the CRM activity he had planned. He's been busier than a one-arm paper hanger all summer trying to get the BAE 146 into operation. So, Mike, will you give us a rundown on your CRM activity?